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IMPROVED BUILDING PERFORMANCE THROUGH EFFECTIVE COMMUNICATION & TRAINING

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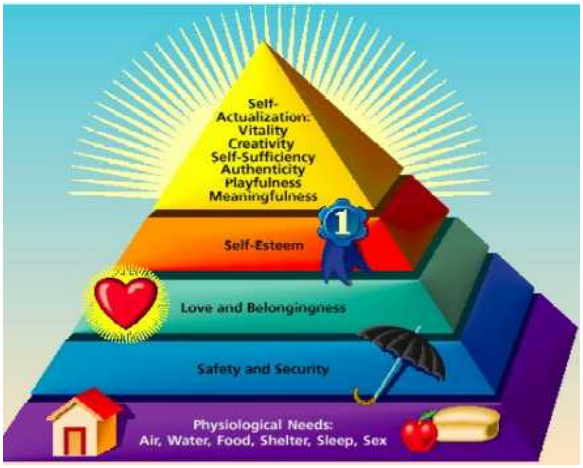
ABSTRACT

This paper describes the procedures involved in the development of a new, multi-level indoor air quality management program that utilizes human behavior science, economics, and conceptual learning techniques. This unique approach has allowed for a clear, concise, and consistent message to be delivered to a broad variety of stake holders with respect to "Best Practices" for improved indoor air quality during the design, construction, operation and maintenance of commercial, educational, institutional, and large residential buildings. Specific training material designs and presentation techniques resulted in a bridging of cultural, language, age, gender, educational, occupational, and experiential barriers that have historically limited prior training program effectiveness. Consensus of objectives and implementation of new policies and procedures across a specific organization's structure is the measure of effectiveness used for this new indoor air quality training.

INTRODUCTION

A series of training modules to promote "Best Practices" that improve indoor air quality during all phases of building design, construction, operation, and maintenance was developed under contract with the U.S. Environmental Protection Agency. A conceptual learning system of adult education was combined with U.S. EPA indoor air guidance documents and programming. An advisory group of 40 organizations was assembled as a coalition of major players in the building design/construction and property management industries. A complete listing of the participating organizations has been included at the end of this document. Representatives from major lending institutions, insurance companies/brokers, building design, general & subcontracting trades, building inspection, facilities management, property management, property maintenance, and property ownership participated in the content development and presentation format of this collective project.

There were multiple objectives for this program starting with a presentation style and format that would bridge several traditional communication and training barriers, i.e. gender, age, race, cultural, education, experience, and job title. Communication characteristics of visual, auditory, and kinesthetic individuals were optimized so that program concepts could be delivered and understood quickly and effectively. Actionable objectives were developed to include a customizable "Indoor Air Quality Management Plan", (24) point building design checklist, (24) point building inspection checklist, , material storage checklist, moisture intrusion incident report, and mold incident report for immediate use in any individual building structure to manage indoor air quality risks in a sustained and systematic manner. All documents were designed to provide a consistent and defensible indoor air quality management plan. Cost effectiveness, adaptability and availability of the training, software, and documentation were considerations throughout each phase of this project.



THE CONCEPT

Abraham Maslow's Hierarchy of Needs (Maslow, 1954) identified human behaviors based on needs. Morris Massey developed his theory of human behavior based on exposure to world events (Massey, 1970). The combination of these theories provides the basis of motivational behaviors for various generations. It is commonly known and openly publicized that sex and money are motivators in today's society. It has also been suggested that we now live in the age of the individual, where an individual's rights, needs, and concerns may be given priority over the rights, needs, and concerns of society. Combine the "Sex, Money, Me!" concepts

with the expectations of immediate gratification as a result of exposure to mass medias i.e. television and the internet, cell phones, fast food, etc. and the challenges to provide effective training increase to "Sex, Money, Me, and Now! There should be no wonder or amazement as to where our teenagers get it from, given the popularity of Las Vegas and state lottery drawings. Any effective training program has to recognize the priorities, address the needs, and show immediate benefits to the individual attendees and their respective employers before expecting significant acceptance and success. This is especially true if attendance and participation in a training program are voluntary vs. mandatory. The standard features, advantages, and benefits approach for providing educational training was changed to: "What's in it for me?" approach.

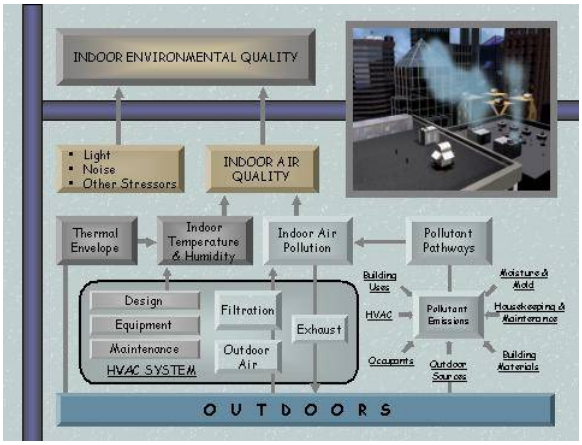
The "What's in it for me?" approach was combined with a conceptual learning system that utilizes the following presentation design specifications:

- Bulleted statements rather than lengthy text
- Color graphics for visual anchors
- Specific colors for specific points of interest
- Optimum font size, type, and spacing for slides
- Optimum font size, type, and spacing for printed materials
- Focused combinations of specific words with graphics
- Optimum times for program attendance
- Optimum length of each course segment
- Presentation guidelines to maximize desired results
- Comprehension measurement tools
- Ongoing research and support to allow for adaptability to changing needs

Sixteen hours of instructor led presentations were developed with these specifications. Testing, changing and retesting have continued to date and is anticipated to continue indefinitely.

The adaptability to computer based training, starting with instructor led, interactive presentations using web conferencing tools, has also been extensively utilized. Here it was determined that the bell and whistle options available with programs such as Microsoft Power Point actually distracted attendees. Through trial and error it was determined that the best results were achieved with:

- White slide backgrounds
- 1-3 Large bold lines of text per slide maximum
- Present (1) idea at a time on a slide
- No special slide transitions – look should be similar to television viewing
- Limit sound & animation features since they are distracting
- Provide handouts that follow along directly with the presentation
- Print "Notes" pages as handouts with white spaces for attendees to take handwritten notes
- Include numbers on both the slide and corresponding handout page
- Color handouts only marginally outperformed black and white handouts
- Color slides out performed black and white visuals
- Use graphics on at least every 4th slide minimally
- Keep the presentation moving – slides should change frequently depending on audience characteristics and charisma of the presenter
- Optimum pace is to change to next slide at least every 3 minutes.
- Expect no sympathy or compassion if your AV equipment malfunctions



THE TOPIC

The Indoor Environments Division of the Environmental Protection Agency developed the Building Education Assessment Model, I-BEAM (EPA, 2002) as a guidance tool. Popularity and interest in this guidance has been slow to catch on even though it is a CD-Rom based program for personal computers. I-BEAM includes extensive resource links to the internet and customizable forms in both Adobe (pdf) and Microsoft Word (doc) formats. The purpose of this project was to design the training and identify specific incentives for attendees and their respective organizations for taking the training and for implementing the management principles. By repackaging the EPA guidance based on "Conceptual Learning System "(CLS) strategies and integrating the repackaged materials back to the Indoor Air Advisory Group Members for opinion and

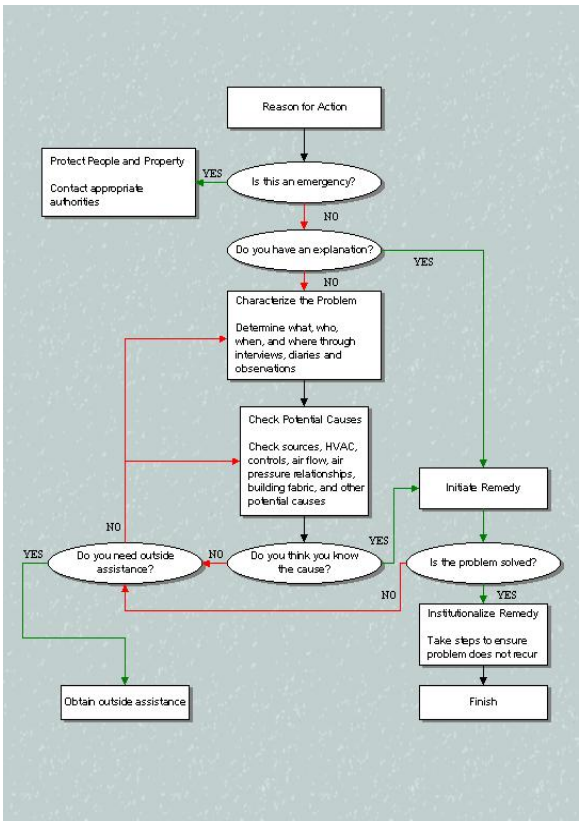
consensus, an overwhelming interest has been created within the IAQ industry.

The new training program with (4) four hour modules allows attendees to interact and progress with measurable results without intimidation or humiliation.

Level 1000 Fundamentals of IAQ in Buildings
Level 2000 Developing a Basic Indoor Air Quality Management Plan
Level 3000 Implementing Your IAQ Plan
Level 4000 Review & Upgrade of Your IAQ Plan

THE RESULT

Interest has turned into action with various groups such as Pavarinni Construction, Associated General Contractors Union, Rutherfoord Insurance, and others requesting this new IAQ guidance in CLS format. Further tests were conducted using a variety of attendee combinations to include 25-35 year old female property managers with 60+ year old male contractors in the same classroom. Combinations such as this met with huge resistance and disfavor at previous attempts by other training providers. Historically, property managers and contractors typically have strained relationships since the contractors are blamed for building defects that the property managers have to deal with, the contractors in turn blame the property managers for not understanding how buildings should be cared for. Separate course materials and separate training programs had been designed although the same underlying guidance was needed for both groups. The gender and age relationship between these groups was identified and IAQ guidance with CLS course design strategies as a solution. Based on the course evaluation sheets and overall attendee comments during and after an (8) hour seminar – 100% of both the property managers and contractors rated the course as Very Good to Excellent in categories of visual aides, printed materials, instructor, and usefulness of the course material. Suggested improvements were restricted to minor comfort level improvements in the presentation room. Per Mark Richards, senior environmental products specialist with Thomas Rutherfoord Insurance Agency of Richmond, VA, "People walked out of previous training programs when we tried to combine property managers and contractors. This is the best mold and moisture prevention training available anywhere."



Phillip Roche, director of operations for Pavarinni Construction in Miami, Fl stated: "The beauty of this program is in its simplicity – everybody understands what needs to be done. This is why this guidance has become our company policy. This is why we have made a significant investment to train all of our project managers, safety personnel, and job superintendents." The conceptual learning system provides that simplistic format for organization and delivery.

Due to the success and interest in this training, "A Train the Trainer Course" has been developed. Tips, tricks, and traps from recognized presenters such as Fred Pryor Seminars, Tony Robbins, Jay Abraham, Tony Alessandra, and numerous others have been combined into a fast paced program for presenters of all experience levels. This program utilizes a conceptual learning system throughout and shows by direct example point by bulleted point.

REFERENCES

(Maslow, 1954)

Maslow, Abraham. 1954. *Hierarchy of Needs.* New York: Harper

(Massey, 1970)

Massey, Morris. 1970. *What you are is where you were when.* Washington: Richardson

(EPA, 2002)

U.S. Environmental Protection Agency. 2002. *I-BEAM*. Washington: EPA

Indoor Air Quality Advisory Group

Air & Waste Management
Air Movement & Control
American Association of Community Colleges
American Bakers Association
ARCS Commercial Mortgage Co. L.P.
Association of School Business Officials International (ASBO)
Building Owners & Managers Association International (BOMA)
Cape Cod Community College
Cleaning Management Institute (CMI)
Corporate Realty & Design Management Institute
Diversified Services, Ltd.
EMSL Analytical
Environmental Education Foundation (EEF)
Environmental Hazards Management Institute (EHMI)
Environmental Monitoring Systems Inc. (EMS)
Environmental Risk Resource Association (ERRA)
E-Wire
Faulkner & Flynn
FMLink
Healthcare Realty
Hellmuth, Obata & Kassabaum, Inc.
Hixson Architecture Engineering Interiors
HUD-Healthy Homes Division
InterFOM
IPM Institute of North America Inc.
IQAir
Leviticus Corporation
Medical University of North Carolina
National Affordable Housing Management Association
National Air Duct Cleaners Association (NADCA)
National Association of Certified Home Inspectors (NACHI)
Partnership for Environmental Technology Education (PETE)
PNC Multi-Family Capital
Pure Air Control

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Trade-Winds Environmental Restoration
Vesar, Inc.
XL-Environmental